

## CLAIMS

What is claimed:

1. A residential construction cost estimation process comprising the steps of:  
  
inputting project criteria;  
  
selecting design characteristics;  
  
calculating a virtual geometry based on the selected design characteristics and inputted project criteria;  
  
selecting assemblies of construction based on the calculated virtual geometry, selected design characteristics and inputted project criteria;  
  
selecting component options based upon the selected assemblies of construction, the calculated virtual geometry, selected design characteristics and inputted project criteria;  
  
calculating a cost of each of the selected component options;  
  
calculating a summary construction cost of a residence at a component level, wherein the cost is dynamically linked to each of the inputted and selected options of the preceding steps, whereby the cost of the residence may be dynamically modeled at a detailed component level at any stage of the design development process.
2. The residential construction estimation process of Claim 1 wherein the data comprising inputted and selected information is stored in computer memory and the cost is computer calculated, the cost capable of being altered such that a new cost is automatically recalculated at a component level based upon the dynamic interaction of the altered information and the step of calculating a cost of the residence.
3. The residential construction estimation process of Claim 1 wherein the step of identifying a cost includes a computer interaction with a database of cost.

4. The residential construction estimation process of Claim 3 wherein the database of costs is adjustable and is adjusted to reflect changing labor and material market conditions.

5. The residential construction estimation process of Claim 3 wherein the database of costs is adjustable and is adjusted to reflect changing sales tax rates.

6. The residential construction estimation process of Claim 3 wherein the database of costs is adjustable and is adjusted to reflect changing sub-contractor general conditions costs.

7. The residential construction estimation process of Claim 3 wherein the database of costs is adjustable and is adjusted to reflect escalation for purposes of estimating construction costs at a future construction date.

8. The residential construction estimation process of Claim 1 wherein the step of identifying a cost includes a computer interaction with a database of geographically dependent factors.

9. The residential construction estimation process of Claim 1 wherein the step of calculating a cost is calculated referencing a total finished area of the residence.

10. The residential construction estimation process of Claim 1 wherein the step of calculating a cost is calculated referencing a total constructed area of the residence including finished and unfinished areas.

11. The residential construction estimation process of Claim 8 wherein the database of geographically dependent factors is based upon an entered zip code and wherein the geographically dependent factors may be selected from the group consisting of:

city, state, construction Market Adjustment Factor, labor / material adjustment factor, sales tax rate, sub-contractor general conditions , and escalation.

12. The residential construction estimation process of Claim 1 wherein the step of calculating a cost is calculated upon the unique combination of components and attributes of the residence.

13. The residential construction estimation process of Claim 1 wherein an alternate cost at a component level reflecting altered information, can be dynamically compared to a base line cost at a component level of the originally inputted and selected information, for documenting the impact of altered information on the cost of the residence.

14. The residential construction estimation process of Claim 13 wherein an alternate cost at a component level reflecting altered information, will self-document the component level impact of altered information on the cost of the residence.

15. The residential construction estimation process of Claim 1 further including the step of inputting information into a data collection tool prior to the step of inputting project criteria.

16. The residential construction estimation process of Claim 15 wherein the step of data collection includes compilation of information entered by a user.

17. The residential construction estimation process of Claim 15 wherein the step of data collection further includes representative drawings of the residence.

18. The residential construction estimation process of Claim 15 wherein the step of data collection includes a web-based interface that collects and directly inputs the project criteria.

19. The residential construction estimation process of Claim 15 wherein the step of data collection includes a questionnaire with responses inputted into a computer or a prepared paper form.

20. The residential construction estimation process of Claim 1 wherein the step of calculating a virtual geometry is calculated based upon the inputted project criteria and the selected design characteristics.

21. The residential construction estimation process of Claim 1 wherein the step of selecting assemblies of construction includes an interaction of logical formulas dependent upon the selected design characteristics for self-directing the assemblies of construction components.

22. The residential construction estimation process of Claim 1 wherein the step of selecting assemblies of construction includes an interaction of logical formulas dependent upon the selected design characteristics for self-correcting the assemblies of construction components.

23. The residential construction estimation process of Claim 1 wherein the step of selecting component options includes an interaction of logical formulas dependent upon the selected system construction components for self-directing the component options.

24. The residential construction estimation process of Claim 1 wherein the step of selecting component options includes an interaction of logical formulas dependent upon the selected system construction components for self-correcting the component options.

25. The residential construction estimation process of Claim 1 further including the step of dynamically calculating an energy model of the residence.

26. The residential construction estimation process of Claim 25 wherein the step of dynamically calculating an energy model of the residence includes the step of calculating Energy Consumption based upon the heat loss per hour, the Annual Fuel Usage Efficiency (AFUE) rating of a furnace, the difference between the indoor design temperature and the outside design dry bulb temperature, a correction factor that includes the effects of rated full load efficiency, part load performance, over sizing and energy conservation devices, an additional empirical correction factor for heating effect versus 65 degrees F days, the heating degree days for the geographic location of the residence and the energy fuel value of the heating fuel used.

27. The residential construction estimation process of Claim 26 wherein the step of dynamically calculating an energy model of the residence includes calculating a Heating

Energy Cost based on the Energy Consumption Calculation and a fuel cost selected from the group consisting of: cost per Therm, cost per gallon and cost per kilowatt-hour.

28. The residential construction estimation process of Claim 26 wherein the step of dynamically calculating an energy model of the residence includes an interaction with a database of geographically dependent factors.

29. The residential construction estimation process of Claim 28 wherein the geographically dependent factors comprise Outside Design Dry Bulb Temperature and Annual Heating Degree Days.

30. The residential construction estimation process of Claim 28 wherein the geographically dependent factors are selected by Zip Code.

31. The residential construction estimation process of Claim 1 further including outputting functionally descriptive material capable of use in a general building specification.

32. A residential construction cost estimation process comprising the steps of:

- inputting project criteria;
- selecting design characteristics;
- calculating a virtual geometry based on the selected design characteristics and inputted project criteria;
- selecting assemblies of construction based on the calculated virtual geometry, selected design characteristics and inputted project criteria;
- selecting component options based upon the selected assemblies of construction, the calculated virtual geometry, selected design characteristics and inputted project criteria;
- calculating a cost of each of the selected component options;

calculating a summary construction cost of a residence at a component level, wherein the inputted and selected data from each of the preceding steps interacts via logical formulas for self-directing and self-correcting the inputted and selected data.